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EXAMINER				
LOTFREDO, JUSTIN E				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/553,864

Applicant(s)

BICHLER ET AL.

Examiner

JUSTIN LOFFREDO

Art Unit

4157

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 7, 10-18 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CI/CC)
Paper No(s)/Mail Date 10/21/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. **Claims 7, 10-18 & 20** are objected to because of the following informalities:

Claim 7 recites the limitation "the exothermic fluid" in line 3 of the claim.

Claim 11 recites the limitation "the heat accumulator system" and "the loop of the heat accumulator system" in lines 3 and 4 of the claim respectively.

Claim 12 recites the limitation "the loop of the heat accumulator system" in line 3 and 4 of the claim.

Claim 13 recites the limitation "the heat accumulator system" in line 4 of the claim.

Claim 14 recites the limitation "the condenser" in line 4 of the claim.

Claim 15 recites the limitation "the heat accumulator system" in lines 2 and 3 of the claim.

Claim 16 recites the limitation "the fluid-air heat exchanger" and "the heat accumulator system" in lines 3-4 and 5 of the claim respectively.

Claim 17 recites the limitation "the heat accumulator system" in line 4 of the claim.

There is insufficient antecedent basis for these limitations in the claims.

Claim 10 recites "in the flow direction **in** the heated outside air flow". It appears that "**in**" (bolded) should be replaced with "**of**".

Claim 18 recites "the valve unit". Although claim 18 is dependent from claim 11, which claims "a first valve unit", since there are multiple valve units claimed, applicant is advised to specify the valve as claimed.

Claim 20 recites "a flow deflection unit is **provided connected**" in lines 2-3 of the claim, which appears to be redundant.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-7** are rejected under 35 U.S.C. 102(b) as being anticipated by Ghodbane (US Patent No. 5,898,995).

Consider claim 1. Ghodbane teaches a combined fluid-air heat exchanger having at least two separate duct systems, an inner tube (12) and an outer tube (14) (col. 3, L 6-7), through which separate material flows (col. 5, L 8-9) may be directed, wherein at least one of the two duct systems (14) has a free surface which may be brought into thermal contact with a directed air flow, and the at least two duct systems are at least partially in thermal contact with one another (col. 5, L 22; Fig. 8). The heat exchanger

being an evaporator is an inherent feature since an evaporator is a heat exchanger commonly used in refrigeration systems to evaporate refrigerant into a gas via heat absorption.

Consider claim 2. Ghodbane teaches the two duct systems implemented in the form of a first pipeline (14) having a first pipe internal diameter d_1 , in whose pipe interior a second pipeline (12), having a second pipe internal diameter d_2 , with $d_2 < d_1$, is provided, the first duct system being delimited by the second pipeline (12) and the second duct system being delimited by the first (14) and second pipeline (12), and the first pipeline (14) having a free pipe outside (col. 3, L 4-16; Fig. 8).

Consider claim 3. Ghodbane teaches fins (30), which are lamellar plane elements attached (brazed and fixed together to complete a rigid core (32)) to the pipe outside of the first pipeline (14) (col. 4, L 30-32; Fig. 8).

Consider claim 4. Ghodbane teaches the two duct systems implemented in the form of a shared pipeline, the pipeline having a pipe surface (see Fig. 8 below), and the pipeline has at least one internal partition wall, which divides the volume enclosed by the pipeline into at least two separate pipeline longitudinal parts and via which the at least two pipeline longitudinal parts are in thermal contact with one another. As taught by Ghodbane, the two fluid media are kept totally separate, but are thermally conductive to and from one another across the shared walls of the inner tubes (col.5, L 21-24).

Consider claim 5. Ghodbane teaches fins (30), which are lamellar plane elements attached (brazed and fixed together to complete a rigid core (32)) to the pipe outside of the first pipeline (14) pipe surface (col. 4, L 30-32; Fig. 8).

Consider claim 6. Ghodbane teaches that a refrigerant (col. 1, L 16) is conducted through one duct system and a secondary fluidic medium that can transfer heat, which is therefore an exothermic fluid, is conducted through the other duct system, and the refrigerant comes into thermal contact both with the exothermic fluid and also, using the lamellar plane elements attached to the free surface, with the directed air flow (col. 5, L 21-32).

Consider claim 7. Ghodbane teaches that the exothermic fluid is conducted through the first duct system, which is the jacketed space created by the first pipeline (14), and a refrigerant, which is the primary flowing medium, is conducted through the second duct system, which is the space bound by the second pipeline (12) (col. 5, L 25-32).

FIG. 7

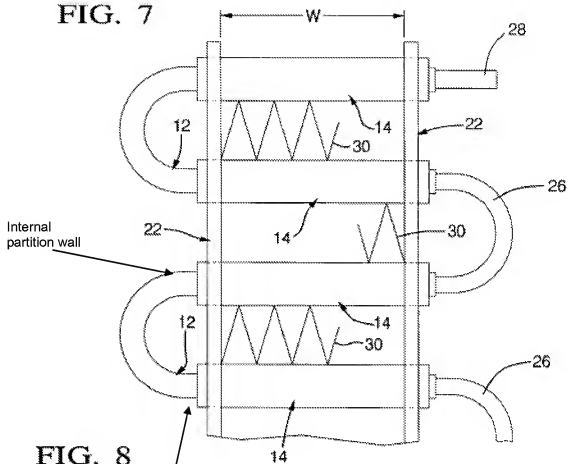


FIG. 8

Shared pipeline

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghodbane (US Patent No. 5,898,995) in view of Bernd et al. (DE 19909286 A1).

Ghodbane fails to disclose the refrigerant evaporator being part of a heat pump.

Bernd et al. teach an air conditioning system, which comprises an evaporator (20), which can be operated as a heat pump (Description, paragraph 2; Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Ghodbane to be used in the refrigeration system taught by Bernd et al. since heat pumps are commonly known in the art of refrigeration systems as an effective means to apply work to move heat by exploiting the physical properties of a refrigerant.

8. **Claims 9-11, 14, 15, 18, 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghodbane (US Patent No. 5,898,995) in view of Bailey et al. (US Patent No. 6,347,527 B1).

Consider claim 9. Ghodbane discloses a refrigerant evaporator through which a refrigerant and a secondary fluidic medium that can transfer heat, which is therefore an exothermic fluid, pass (col. 5, L 21-32).

Ghodbane fails to disclose a ventilation arrangement having heat absorption from a used air flow directed out of the building, which comes into thermal contact with an outside air flow via an air-air heat exchanger, or the refrigerant circulating in the loop of a heat pump.

Bailey et al. teach a ventilation arrangement for a structure having heat absorption from a stale air exhaust duct (24), which is a used air flow directed out of the building, which comes into thermal contact with an outside air flow from fresh air intake (23) via an air-air heat exchanger (13), and a heat pump (col. 15, L 19; col. 16, L 34-35; Fig. 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Ghodbane to be used in the system taught by Bailey et al. since a heat pumps are commonly known in the art of refrigeration systems as an effective means to apply work to move heat by exploiting the physical properties of a refrigerant, and to provide a better supply of fresh, treated air to a room environment.

Consider claim 10. Ghodbane as modified above disclose the invention including wherein the heat pump has an evaporator/condenser (10) which is connected downstream from the air-air heat exchanger (13) in the flow direction in the heated outside air flow and an intake air flow which is directed into the building via duct (2), arises downstream in the flow direction from the condenser (10) (col. 16, L 63; col. 19, L 4-5; Fig. 10)

Consider claim 11. Ghodbane as modified above disclose the invention including a first valve unit (41) through which the circulation of the fluid through the accumulator (66), which is the heat accumulator system, may be regulated (col. 9, L 34-35).

Consider claim 14. Bailey et al. teach connecting a liquid heat exchanger to a commercial building water source, which is an industrial water accumulator. The accumulator would therefore be thermally coupled to the heat pump and either in parallel or series with the condenser as taught by Bailey et al (refer to the rejection of claim 9) (col. 3, L 10-12).

Consider claim 15. Bailey et al. teach a geothermal heat pump which uses renewable energy available underground, which is a geothermal collector (col. 10, L65; col. 11, L 3-5).

Consider claim 18. Bailey et al. teach three-way valves (col. 2, L 63).

Consider claims 19, 20 and 22. Bailey et al. teach a bypass valve, which is a flow deflection unit that may switch off the evaporator/condenser (10), thereby either allowing or prohibiting the used air flow to permeate the evaporator (col. 17, L 16). This indicates that the used air flow is conducted in a fixed predefined quantity ratio, either all the way open or all the way closed, through the combined fluid-air evaporator. Since this evaporator/condenser (10) uses Freon and air, one having ordinary skill in the art would recognize the advantages of using the combined fluid-air evaporator disclosed by Ghodbane as discussed above.

9. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghodbane (US Patent No. 5,898,995) in view of Bailey et al. (US Patent No. 6,347,527 B1) as applied to claim 9 above, and further in view of Christensen (US Pub. No. 2005/0061311 A1).

Ghodbane as modified above fails to disclose a solar collector that is permeated by a collector flow that may be connected to the fluid-air heat exchanger and/or the combined fluid-air evaporator alternatively or in combination with the fluid circulating in the loop of the heat accumulator system.

Christensen teaches that solar collector panels that are permeated by an air collector flow, wherein the collectors can be used for ventilation or as a medium for conveying heat to a heat exchanger (paragraphs [0001] and [0003]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by Ghodbane as modified above with the solar collector taught by Christensen as an efficient, low maintenance source for heating while reducing energy costs and using clean, renewable energy.

10. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ghodbane (US Patent No. 5,898,995) in view of Bailey et al. (US Patent No. 6,347,527 B1) as applied to claim 19 above, and further in view of Wiseman (US Patent No. 5,291,182).

Ghodbane as modified above fails to specifically disclose the flow deflection unit being a flow flap.

Wiseman teaches a flow deflecting rectangular flap (95) (col. 7, L 62).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by Ghodbane as modified above with the flow deflecting flap taught by Wiseman since the use of a flap is old and well known in the art

to direct flow, and a flap can perform the same function as a valve with regard to flow deflection.

11. **Claims 12, 13, 17 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghodbane (US Patent No. 5,898,995) in view of Bailey et al. (US Patent No. 6,347,527 B1) as applied to claim 9 above, and further in view of Ghodbane et al. (US Patent No. 6,405,793 B1).

Consider claim 12. Ghodbane '995 as modified above disclose the invention as claimed above including the air-air heat exchanger and accumulator (66).

Ghodbane '995 as modified above fails to disclose a fluid-air heat exchanger in the loop of the heat accumulator system provided in the outside air flow in the flow direction before the air-air heat exchanger.

Godbane et al. '793 teach a dual fluid heat exchanger (32), which is a fluid-air heat exchanger that may be in series or parallel with additional heat exchangers, provided in the outside air flow from fan (27) (col. 2, L 35; col. 4, L 29; Fig. 2).

It would have been obvious to one of ordinary skill in the art to modify the invention disclosed by Ghodbane '995 as modified above with the fluid-air heat exchanger taught by Godbane et al. '793 to allow for more climate controlling capability.

Consider claim 13. Ghodbane et al. '793 teach a three-way valve (26), which is a second valve unit to regulate the inflow to the fluid-air heat exchanger (32) (col. 3, L 60).

Consider claim 17. Ghodbane '995 as modified above fails to disclose a third valve unit which may regulate the inflow of the fluid-air evaporator in the loop of the heat accumulator system.

Ghodbane et al. '793 teach a valve (38), which is a third valve, which may regulate flow through the system (col. 4, L 56).

It would have been obvious to one of ordinary skill in the art to modify the invention disclosed by Ghodbane '995 as modified above with the system including the valve taught by Ghodbane et al. '793 to provide a well known and reliable means to properly direct refrigerant flow.

Consider claim 23. Bailey et al. disclose a heat pump and a refrigerant loop.

Ghodbane et al. '793 teach dual fluid heat exchanger (32), which is a fluid-air heat exchanger.

Therefore, Ghodbane '995 as modified in claim 12 discloses the limitations recited in **claim 23**.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Felber et al. (US Patent No. 6,355,091 B1) teach a ventilation system utilizing air-air heat exchange including a used air flow, outside air flow, intake air flow, and fresh indoor air flow.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN LOFFREDO whose telephone number is (571) 270-7114. The examiner can normally be reached on M - F 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on (571) 272-5026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Justin Loffredo

18 November 2008

/Zelalem Eshete/

Primary Examiner, Art Unit 3748